PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Ting WANG, et al.

Docket No: A8032

Appln. No.: 09/853,575

Group Art Unit: 2874

Confirmation No.: 7192

Examiner: M. Connelly-Cushwa

Filed: May 14, 2001

For: OPTICAL LUMINESCENT DISPLAY DEVICE

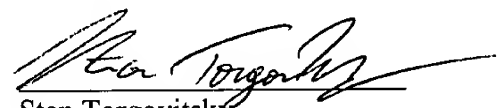
SUBMISSION OF APPELLANTS' BRIEF ON APPEAL

Commissioner for Patents
Washington, D.C. 20231

Sir:

Submitted herewith please find an original and two copies of Appellant's Brief on Appeal. The USPTO is directed and authorized to charge the statutory fee of $320.00 and any other required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,



Stan Torgovitsky
Registration No. 43,958

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: October 16, 2002

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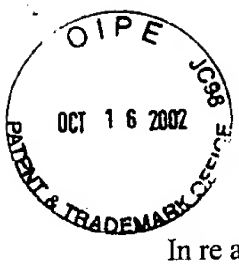

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APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. § 1.192

Commissioner for Patents
Washington, D.C. 20231

Sir:

The following comprises the Appellant's Brief on Appeal from the rejection dated April 17, 2002, wherein claims 1-5, 19, 20 and 43 were rejected for the second time. This is a Continuation Application of prior Application No. 09/246,145 filed February 8, 1999 of Ting WANG, Allan SCHWEITZER, and Maximilan OTT entitled OPTICAL LUMINESCENT DISPLAY DEVICE which issued as U. S. Patent No. 6,307,987 B1. This Appeal Brief is filed in triplicate and is accompanied by a Submission which includes the required appeal fee set forth in 37 C.F.R. § 1.17(f). Appellant's Notice of Appeal was filed on July 16, 2002. Applicants file herewith a Petition for Extension of Time of one month. Therefore, the present Appeal Brief is timely filed.

I. REAL PARTY IN INTEREST

Appellant respectfully submits that the above-captioned application is assigned in its entirety to NEC RESEARCH INSTITUTE, a company organized under the laws of the United States of America.

II. RELATED APPEALS AND INTERFERENCES

Appellant states that, upon information and belief, Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

This is an appeal from the rejection dated April 17, 2002, wherein claims 1-5, 19, 20 and 43 were rejected for the second time (see Office Action dated February 28, 2001, in the parent of this Continuation Application).

The present application was filed on May 10, 2001 with claims 1-5, 19, 20 and 43 (claims 6-18, 21-42 and 44-48 were allowed in the parent application, and thus were canceled in a Preliminary Amendment filed May 10, 2001). Claims 1, 2 and 20 were amended in the Preliminary Amendment filed May 10, 2001 to conform these claims to the Amendment filed December 14, 2000 in the parent of this Continuation Application. Also claim 43 was amended to address minor precision of language issues as agreed during the telephonic interview of May

1, 2001 between the Examiner, Examiner's Supervisor and Appellants' representative. No amendments were made to the application after the May 10, 2001 Preliminary Amendment.

Claims 1-5, 19, 20 and 43 stand rejected under the doctrine of "double patenting" over claims 1-40 of U. S. Patent No. 6,307,987 B1, which is the parent of this continuation application. Appellants respectfully submit that this issue will be best addressed after all other patentability issues have been resolved, so that the claims are in their final form for comparison against claims 1-40 of U. S. Patent No. 6,307,987 B1. Appellants expect to file a terminal disclaimer to remove this rejection should these claims be found allowable in their present form.

Accordingly, claims 1-5, 19, 20 and 43 (see attached Appendix) are the claims currently on appeal, from the rejection under 35 U.S.C. §103(a) in view of Crossland et al. (WO 95/27920) and Appeldorn et al. (U.S. Patent No. 5,659,643).

IV. STATUS OF AMENDMENTS

A Preliminary Amendment was filed May 10, 2001 to cancel claims 6-18, 21-42 and 44-48 which were allowed in the parent application, to conform claims 1, 2 and 20 to the Amendment filed December 14, 2000 in the parent of this Continuation Application, and to address minor precision of language issue in claim 43. This Amendment has been entered (see Office Action mailed May 17, 2002).

V. SUMMARY OF THE INVENTION

Appellants' invention is in the field of display devices and relates generally to the use of a luminescent compound radiated by energy propagated from the side of an optical fiber. One aspect of the invention provides a display matrix made from coincidentally-excited phosphors, while another aspect provides an optical switch. An advantage achieved by Appellants' invention is a very thin, light and durable panel that produces no electromagnetic interference or noise. (Appellant's specification, page 1, lines 9-24.)

In accordance with one of the aspects of the invention as illustrated in Fig. 1, an optical luminescent display device 30 comprises an optical fiber 32 that includes a notch 34. The notch 34 contains a luminescent material 36, such as a phosphor or other fluorescent material. This luminescent material 36 may be placed inside or outside the notch 34, such that the radiation provided through the optical fiber 32 is directed toward the luminescent material 36 causing the luminescent material 36 to emit visible light. (Appellant's specification, page 7, line 6 through page 10, line 21.)

In accordance with another aspect of the invention as illustrated in Fig. 6, an optical switch device 60 comprises an optical luminescent display device 30 provided with a luminescent material 36 and one or more optical pickups 62. The optical switch device 60 is activated when both types of radiation are provided within the optical fiber 32 to cause the luminescent material 36 to emit visible light. (Appellant's specification, page 13, line 1 through page 14, line 11.)

VI. ISSUE

1. Whether claims 1-5, 19, 20 and 43, are unpatentable over the combination of Crossland et al. (Crossland) and Appeldorn et al. (Appeldorn) under 35 U.S.C. §103(a).

VII. GROUPING OF CLAIMS

It is noted that the rejected independent claim 43 does not stand or fall together with the rejected claims 1-5, 19 and 20, but recites separately patentable features as set forth below (see pages 7 and 8 of Section VIII). Claims 1-5, 19 and 20 stand or fall together.

VIII. ARGUMENTS

As explained in Appellants' December 14, 2000 Amendment filed in the parent application, Crossland and Appeldorn, alone or in any reasonable combination, do not teach or suggest an optical luminescent display device, comprising both a "luminescent material" and an "optical fiber", configured as recited in Appellants' independent claims 1, 3, 19 and 43, and do not teach or suggest a method for causing a luminescent material to emit visible light by "emitting radiant energy into an optical fiber" and "directing said radiant energy toward a luminescent material via a notch formed in said optical fiber", as recited in Appellants' claim 20.

In particular, Crossland discloses nothing more than a display screen which comprises "a backing layer (17) acting as a light guide for activating light" *(Id.,* Abstract). That is, nowhere does Crossland teach or suggest using anything other than "the lightguide substrate, indicated at 17" *(Id.,* page 15, lines 1-4; see *Id.* Figures 2-15*)*. In fact, Crossland, which is directed to various structures for the lightguide substrate layer, does not disclose, teach or suggest using anything other than layer 17 as a light guide for the activating light for phosphor-type light emitting elements in a liquid crystal display screen.

On the other hand, and contrary to the Examiner's analysis, Appeldorn, which discloses using optical fibers having "a series of notches (4)" as illumination devices, (see *Id.,* Figures 1 and 9), does not disclose, teach or suggest using optical fibers as a light guide for the activating light for a phosphor-type light emitting element. That is, Appeldorn discloses a display panel wherein the optical fibers themselves serve as visible light emitting elements. In Figure 10, Appeldorn illustrates a display panel, which has "a substantially parallel array (46) of optical fibers (48), and a front panel in the form of a liquid crystal shutter array (LCS) (50)":

> Red light is transmitted through the first fiber of every three, green light the second and blue light the third. The colour of the light propagating through each fiber is indicated by the letters 'R' (red), 'G' (green) and 'B' (blue) respectively.
>
> It will be appreciated that each group of three fibers and their corresponding shutter can define a 'pixel' on an imaging screen. Four such pixels denoted by A to D are illustrated in FIG. 10 emitting green (A), green (B), red (C) and blue (D) light respectively.
>
> (Appeldorn, column 12, line 39 through column 13, line 1).

Therefore, while Appeldorn discloses using optical fibers as illumination devices, Appeldorn does not teach or suggest using optical fibers for delivering radiant energy to a luminescent material, as recited in Appellants' independent device claims 2, 3, 19 and 43, and does not teach or suggest directing radiant energy, emitted into an optical fiber, toward a luminescent material via a notch formed in the optical fiber, as recited in Appellants' method claim 20.

The Examiner alleges that, "[a] person of ordinary skill in the art would have found it obvious to apply teachings directed to one light guide to another light guide, regardless of the specific shape [i.e., light-guiding substrate or optical fiber]. Thus, the Examiner concludes that "[o]ne of ordinary skill in the art at the time of the invention would have found it obvious to incorporate an array of side-emitting optical fibers, as taught by Appeldorn, as a backing layer in the invention of Crossland et al." (Office Action paragraphs 12 and 13). However, this is not supported by the actual disclosure of either Appeldorn or Crossland. That is, as explained above, nowhere does Crossland teach or suggest having anything other than layer 17 as a light guide for providing activating light for "phosphor-type elements". On the other hand, Appeldorn specifically teaches to use optical fibers themselves as illumination devices, i.e., as direct sources of visible light. In fact, Appeldorn discloses that one of the advantages of an illumination device as illustrated in its Figure 10, is that "unlike commercially available systems the imaging light only passes through a single LCS producing a bright picture" (column 13, lines 6-8). Therefore, Appeldorn does not teach or suggest using optical fibers for providing activating light, but discloses that the light propagated through optical fibers is to be directly viewable. That is, in

contradistinction to Appellants' claimed invention, Appeldorn does not teach or suggest, but teaches away from, a device and a method wherein radiant energy is emitted into an optical fiber, and is then directed via the optical fiber to a luminescent material.

Furthermore, the Examiner's allegation that "[a] person of ordinary skill in the art would have found it obvious to apply teachings directed to one light guide to another light guide, regardless of the specific shape" (Office Action, paragraph 12), is not supported by any of the prior art reference. On the contrary, the function and operation of optical fibers, particularly, notched optical fibers which are capable of selectively emitting light only at the notches thereof, is quite different from light-diffusing panels which receive light from a source and provide a plane of light (see, e.g., Appeldorn, col. 2, line 49 through col. 3, line 22). Thus, without the benefit of Appellants' own disclosure, one of ordinary skill in the art would not have been motivated to replace Crossland's layer 17 designed to illuminate, for example, all of the "lenslets" arranged in a two-dimensional array (see Crossland's Fig. 7) with an array of optical fibers wherein each fiber is designed to provide selective illumination only in one dimension, i.e., only at the notches thereof.

Finally, Appellants' independent claim 43 defined an optical switch which, in addition to the novel arrangement of a luminescent material and a notched optical fiber, also comprises an optical pickup arranged to optically communicate with the luminescent material. Neither Crossland nor Appeldorn discloses "an optical switch", let alone teaches or suggests an optical switch as claimed in Appellants' claim 43. The Examiner's assertion that "one of ordinary skill in the art would have found it obvious to incorporate an optical pickup in the invention of

Crossland et al. to receive the light from the luminescent material" (Office Action, paragraph 16) finds no bases in any of the prior art references. In fact, as discussed above, Crossland does not disclose any luminescent material, but simply provides directly viewable light. Furthermore, one of ordinary skill in the art would have no reason for incorporating an optical pickup device in either Crossland's display screen or Appeldorn's illumination devices. Certainly neither Crossland, nor Appeldorn, teaches or suggests such an arrangement.

In summary, Appellants' claims 1, 3, 19, 20 and 43, as well as the dependent 4 and 5 (which incorporate all the novel and unobvious features of their base claim 3) would not have been obvious from Crossland and Appeldorn, at least for the reasons noted above.

The present Brief on Appeal is being filed in triplicate. Unless a check is submitted herewith for the fee required under 37 C.F.R. §1.192(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

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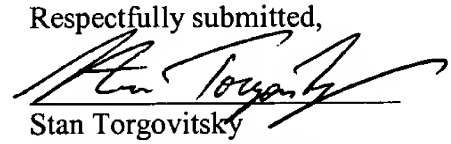
Respectfully submitted,



Stan Torgovitsky
Registration No. 43,958

SUGHRUE MION, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

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